DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 74.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-012031
Date Inspected: 01-Feb-2010

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Goodwin Steel, UK

OSM Arrival Time: 750
OSM Departure Time: 1905
Location: Stoke-on-Trent, UK

CWI Name: Fred Hawksworth, Subcontracted

Inspected CWI report:	☐ Yes	☐ No	☑ N/A	**CWI Present:**	☐ Yes	☑ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Cable Band Castings

Summary of Items Observed:

The following report is based on METS Caltrans QA Inspector Mike Brcic's observations at Goodwin Steel Castings, Stoke-on-Trent, England, UK, on the above noted date and times.

REPAIR WELDING

- GG29432-6 (B8-1-M) This QA Inspector observed welder Adam Migas, welder ID AM80, performing Shielded Metal Arc (SMAW) process, 4mm, E7018-1 electrode, in the 1G, flat position. Parameters of WPS 04-0120F4B issue 5, were verified and followed, Amp average during observation was 171, Voltage was 24.3. Temperature of casting exceeded 170° Celsius (preheat) and was below 399° Celsius for an interpass temperature, these were the actual temperature limits verified by the use of temperature melting sticks. Travel Speed of 4mm electrode pass was 228.6mm/min. Excavation in work was identified as #2 (weld build up), classified as "Major", on the approved Weld Excavation Map.

- GG29443-1 (B11-2-F) This QA Inspector observed welder Adrian Barnett, welder ID# AB59, performing Shielded Metal Arc (SMAW) process, 3.2mm, E7018-1 electrode, in the 1G, flat position. Parameters of WPS 04-0120F4B issue 5, were verified and followed, Amp average during observation was 99, Voltage was 21.4. Temperature of casting exceeded 170° Celsius (preheat) and was below 399° Celsius for an interpass temperature, these were the actual temperature limits verified by the use of temperature melting sticks. Travel Speed was 124. 3mm/min. Excavation in work was identified as #2 on rope groove flange, classified as "Major", on the approved Weld Excavation Map.

MECHANICAL TESTING

The following tensile testing was performed by Goodwin Steel Castings Quality Control Technician, Mr. Martyn Hilditch. The testing was witnessed and completed today:

GG29422-8, Heat F7474 2nd PWHT

Yield Strength	425 N/mm²
Ultimate Tensile Strength	583 N/mm²
Elongation	26 %
Reduction of area	56 %

GG29422-13, Heat C8057 2nd PWHT

Yield Strength	376 N/mm²
Ultimate Tensile Strength	624 N/mm²
Elongation	22 %
Reduction of area	35 %

GG29427-3, Heat C7989 PWHT

Yield Strength	508 N/mm²
Ultimate Tensile Strength	699 N/mm²
Elongation	15 %
Reduction of area	26 %

Specimen Failed due to low Elongation (minimum 22%), and low Reduction in Area (minimum is 35%) as setforth by ASTM A148 and contract documents.

GG29429-5, Heat F7580 PWHT

Yield Strength	399 N/mm²
Ultimate Tensile Strength	602 N/mm²
Elongation	24 %
Reduction of area	47 %

GG29429-7 Heat C8070 PWHT

Yield Strength	401 N/mm²
Ultimate Tensile Strength	619 N/mm²
Elongation	27 %
Reduction of area	55 %

GG29429-11, Heat F7722 PWHT

Yield Strength	380 N/mm²
Ultimate Tensile Strength	613 N/mm²
Elongation	26 %
Reduction of area	55 %

GG29436-1, Heat C7930 2nd PWHT

Yield Strength	445 N/mm²
Ultimate Tensile Strength	593 N/mm²
Elongation	26 %
Reduction of area	59 %

GG29451-4, Heat F7638 PWHT

Yield Strength	415 N/mm²
Ultimate Tensile Strength	598 N/mm²
Elongation	24 %
Reduction of area	52 %

GG29449-3, Heat C8019 PWHT (loose block specimen)

Yield Strength	365 N/mm²
Ultimate Tensile Strength	571 N/mm²
Elongation	29 %
Reduction of area	61 %

PREPAIR FOR DISPATCH TO GOODWIN INTERNATIONAL

The following castings were prepared for dispatch to Goodwin International for machining. The QA Inspector did a random check of four castings to confirm compliance to drawings and project specifications.
GG29419-2 (B2-1-F)*
GG29422-8 (B4-1-M)*
GG29429-5 (B7-1-F)*
GG29422-13 (B4-1-M)*
GG29429-5 (B7-1-F)
GG29436-1 (B9-1-M)
GG29449-3 (B15-1-F)
GG29451-4 (B16-1-F)
*Castings chosen for random general compliance to drawings and project specifications.

Unless otherwise noted, all observations reported on this date appeared to be in general compliance with applicable contract documents.

Summary of Conversations:
No significant conversations took place this day that this Caltrans METS Inspector was a party to.

Comments
This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy, 1(510)385-5910, who represents the Office of Structural Materials for

your project.

Inspected By:	Brcic,Michael	Quality Assurance Inspector
Reviewed By:	Edmondson,Fred	QA Reviewer